Tuberculosis associated with retinal vasculitis has been reported previously[7] more than 20 years ago, although there was no evidence of vasculitis here. This case highlights the fact that CRVO can occur as a result of tuberculosis and transient visual disturbance should be appropriately investigated. With the increase in the incidence of tuberculosis, it is important to include it in the differential diagnosis list for CRVO.

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Maggot therapy following orbital exenteration

Orbital exenteration is a radical surgery reserved for the treatment of locally invasive or potentially life-threatening orbital tumours.[1] Complications occur after 20–25% of exenterations and include tissue necrosis (6%) and infection (3–4%).[2–4] In the present report, we describe the management of a post-exenteration orbital infection by the use of maggots.

Case report

An 82-year-old multimorbid man presented with a fist-sized painless tumour of the left orbit (fig 1A). Computed tomography demonstrated an orbital mass clearly demarcated from the surrounding tissue (fig 1B). After biopsy, the neoplasm was classified as a borderline-malignant extrapleural solitary fibrous tumour. Therefore, a total orbital exenteration was performed, and the wound was left open to heal by granulation. Postoperatively, the patient's general condition worsened because of an infection of the urinary tract and a transient ischaemic attack. In addition, orbital wound secretion became purulent by the twelfth postoperative day despite intensive local disinfection using hydrogen peroxide, treatment with gentamycine ointment, and oral application of ciprofloxacine 500 mg once a day. Microbiological analysis of the wound secretion revealed ampicillin-sensitive *Enterococcus* and *Bacteroides* species. The systemic antibiotic therapy was adjusted to intravenous application of ampicillin 1.2 g three times a day. Nevertheless, no reduction of the purulent secretion was observed. As the patient did not qualify for surgical debridement because of his poor general condition, we decided to place a small envelope of nylon gauze with 50 blowfly maggots (*Lucilia sericata*, BIOBAG 50; BioMonde GmbH, Barsbüttel, Germany) into the orbit (fig 2) while continuing systemic antibiotic therapy. Within this biobag the larvae come into contact with the wound fluids but they cannot escape. When the bag was replaced by a new one four days later, almost no purulent secretion was seen. By this time, maggots had grown from 3 mm to approximately 10 mm in size. After a second larval application of four days, the orbit was free of purulent secretion. To prevent new infection, wound treatment was continued by the local application of azidamfenicol ointment two times a day.

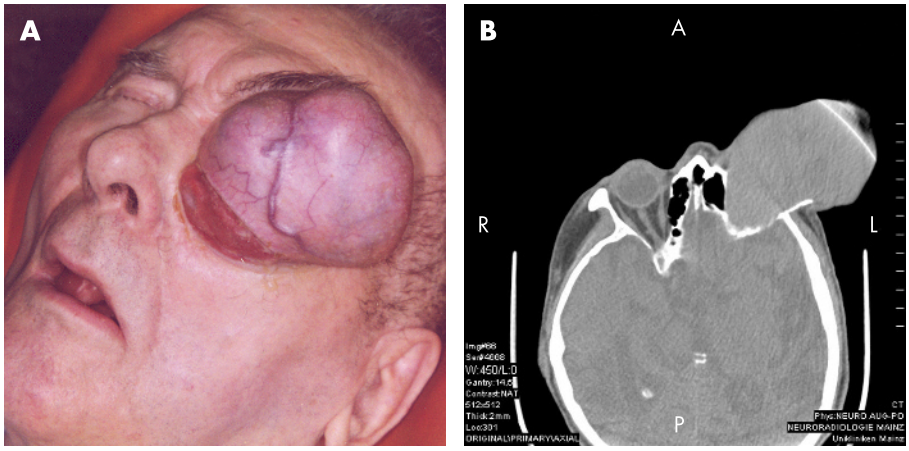

Figure 1 (A) Preoperative photograph of patient with a fist-sized tumour of the left orbit. (B) Computed tomography showing a homogeneous orbital mass. Informed consent was obtained for publication of this figure.

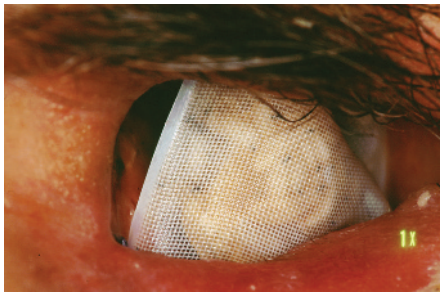

Figure 2 A small envelope of nylon gauze with 50 maggots was placed into the orbit. Within the biobag the larvae exert their antimicrobial and wound-debriding effects without the risk of escaping.

Comment

Advanced age, multimorbidity, and drug-resistant bacteria are increasing challenges to wound care. Therefore, alternative ways for debridement and for the management of local infections in addition to the administration of antibiotics are helpful. Clinical observations provide evidence that maggots applied to wounds remove necrotic tissue, promote disinfection, and accelerate granulation tissue formation.[5] The larvae ingest microorganisms and destroy them during their passage through the digestive tract.[6] In addition, the excretions/secretions released by maggots exert antimicrobial effects and induce fibroblast migration.[7 8] So far larval debridement therapy has proved successful in a variety of non-healing skin and soft tissue wounds, e.g. neuropathic and ischaemic foot ulcers.[9] To our knowledge, however, this is the first report on the medical use of maggots in an ophthalmic patient. Potential complications of larval therapy, such as pain, pressure-induced ischaemia, and patient anxiety can be prevented by analgesics, spacious wound dressings, and patient education.[10] None of these adverse effects was observed in our patient. The present case suggests that maggot therapy is a low-invasive, efficient and cost-effective option for the treatment of postoperative orbital infections in patients not responding to antbiotic therapy and not qualifying for surgical debridement.

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Intravitreal bevacizumab (Avastin) for the treatment of choroidal neovascularization in age-related macular degeneration: results from 118 cases

Several vascular endothelial growth factor inhibitors have recently been studied as treatments for neovascular AMD.[1 2] Pegaptanib sodium improved visual acuity in 6% of patients at one year;[1] Ranibizumab 0.5 mg improved vision by three lines in 33% of patients at one year.[2] Michels *et al*.[3] initially reported the use of intravenous bevacizumab for the treatment of choroidal neovascularization (CNV), and others have found visual improvement and reduction in macular thickness with intravitreal bevacizumab.[4–8] We present the results from 118 cases treated with intravitreal bevacizumab based at a single centre.

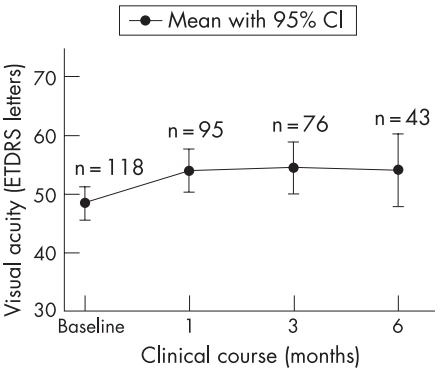

Figure 1 Graph showing change in mean visual acuity (derived Early Treatment Diabetic Retinopathy Study (ETDRS) letters) after intravitreal bevacizumab treatment.

Methods

A retrospective review of 115 consecutive patients (118 eyes) based at Southampton Eye Unit, treated with intravitreal bevacizumab for CNV was performed. Lesions of all types irrespective of size or location that were either ineligible for photodynamic therapy (PDT) under the National Health Service (including minimally classic and occult CNV) or those not responding to PDT (classic or predominantly classic CNV with recurrent or persistent CNV activity) were included in the study (table 1). All patients underwent visual acuity testing (best corrected Snellen), slitlamp examination and fundus fluorescein angiography. Central macular thickness (CMT) was assessed using Stratus optical coherence tomography (Carl Zeiss Meditec, USA).

After discussion about the off-label nature of treatment and the potential risks, informed consent was obtained from all patients. Intravitreal bevacizumab 1.25 mg was injected via the pars plana under sterile conditions; topical antibiotics were given for five days postoperatively. Patients were followed up at 2–4 weeks and then at 1-month intervals; Repeat injections were offered in the event of persistent lesion activity (indicated by persistent intraretinal/subretinal fluid or fibrovascular pigment epithelial detachment). All patients were monitored for any systemic and ocular adverse events. Blood pressure was measured before and 4–6 weeks after treatment.

Snellen visual acuity was converted to a standard logarithm of the minimum angle of resolution scale and ETDRS letter score for statistical analysis.[6] The Mann–Whitney test was used to compare the mean visual acuity and CMT, before and after treatment.

Table 1 Baseline characteristics

Demographic details	Numbers
Age, mean (range)	78.7 (50–93)
Male : female	46 : 69
Lesion subtypes (n = 118)	
Classic CNV	10
Predominantly classic CNV	10
Minimally classic CNV	15
Occult CNV	74
Peripapillary CNV*	3
Unknown/unclassified	6
Average baseline visual acuity	
Snellen acuity	6/30
ETDRS letters (mean ± SD)	48.5 ± 15.6
LogMAR vision (mean ± SD)	0.73 ± 0.31
CMT (mean ± SD)	346.3 ± 79.3 μm

CMT, Central macular thickness; CNV, choroidal neovascularization; ETDRS, Early Treatment Diabetic Retinopathy Study; logMAR, logarithm of the minimum angle of resolution; SD, standard deviation.
*With or without subfoveal extension.

Results

Demographic details and lesion subtypes are detailed in table 1. Thirty-six eyes had received other modalities of treatments (including PDT and periocular/intravitreal steroids) before intravitreal bevacizumab. At baseline, the mean ETDRS score was 48.5 ± 15.6 (Snellen equivalent 6/30). The mean CMT was 346.3 ± 79.3 μm (n = 57). In total, 219 injections were given. The mean number of injections per patient was 1.86; mean follow-up was 4.6 months (range 1–9 months).

At one month (n = 95), the mean ETDRS score improved to 54 ± 17.9 (Snellen equivalent 6/24; $p = 0.05$). At three months (n = 76), the score improved further to 54.5 ± 19.2 ($p = 0.01$). This improvement in vision was maintained at 5–6 months (n = 43), although was not statistically significant ($p = 0.09$), with a mean score of 54.1 ± 20.0. The change in visual acuity after intravitreal bevacizumab is depicted in fig 1.

At final follow-up, 104 eyes (88%) had stable or improved vision. Although stable vision (gain or loss of <15 letters) was noted in 77 (65.2%) eyes, 27 eyes (22.8%) achieved more than 15 letters improvement. Fourteen eyes (11.9%) lost more than 15 letters of vision. Classic and predominantly classic CNV groups showed a greater improvement in vision, whereas the occult CNV group showed the least visual improvement after treatment.

There was a statistically significant reduction in CMT after intravitreal bevacizumab. The mean CMT (n = 57) reduced from 346.3 ± 79.3 μm at baseline to 259.6 ± 67.6 μm at final follow-up ($p<0.0001$). The change in macular thickness did not show any correlation with the change in visual acuity ($p = 0.2$).

One patient, non-compliant to postoperative antibiotics, developed endophthalmitis positive for *Staphylococcus aureus* and requiring vitrectomy. One patient developed a retinal pigment epithelial rip two weeks after treatment. No patient had thromboembolism or any other systemic adverse events. The average systolic pressures before and after treatment were 147.9 and 146.4 mm Hg ($p = 0.8$), whereas the corresponding diastolic pressures were 80.6 and 77.0 mm Hg, respectively ($p = 0.24$).

Comment

In this retrospective review of eyes with neovascular AMD, visual acuity improved by more than 15 ETDRS letters in 27 eyes (22.8%) and stabilised in a further 77 eyes (65.2%) after intravitreal bevacizumab. Only 14 eyes (11.9%) lost 15 letters or more of vision. The mean visual acuity improved from a Snellen equivalent of 6/30 to 6/24 at one month, and this improvement was maintained at six months. The mean macular thickness decreased by 87 μm, with a reduction in intraretinal and subretinal fluid and pigment epithelial detachment. Many patients had not responded satisfactorily to other forms of treatment such as PDT and periocular/intravitreal steroids. The reduction in macular thickness was not always